



IN THE DARC



<http://www.w5fc.org>

Randy Patterson, KE5JIT, Editor

July 2011

IN THIS ISSUE:

Masthead	1
July DARC Presentation	1
W1PE	2
President's Corner	2
Did You Know - Tom Thumb	5
Board Minutes - July Area Events	6
Regular Mtg. Notes - QRT	7
DARC Events; HF Trial	8
Treasurer's Report - Tech Net Tidbits	8
HamCom Pictures	10
DARC Field Day Pictures	11

DARC UPCOMING EVENTS:

DARC Meeting on the Air - Sunday, July 3
146.88 MHz 7:00 PM - 1st & 3rd Sundays
All hams are welcome to join this get-together.

Dallas RACES Training Net - Sunday, July 17
146.88 MHz 8:00 PM - 3rd Sunday
Everyone is invited to listen, but only RACES appointed stations are permitted to participate.

DARC Board Meeting - Tuesday, July 5
Brookhaven Church Business 6:00 PM
DARC board meetings are open to anyone who wishes to attend, visit, and observe.

DARC Club Meeting - Tuesday July 5
Burger House (Informal Meet Up) Dinner 6:00 PM
Brookhaven Church Business 7:00 PM

NTS DFW Early Traffic Net - Every Day
146.88 MHz 6:30 PM - every evening
All hams are invited to this traffic and training net.

Tech Net on the Air - Every Saturday

July DARC Presentation

We have a special treat for our Tuesday, July 5 meeting. It's not often we can celebrate the birth of a new ham-to-be parented by hams. Kellie KC8TSX and Bill AD8BC are expecting a new baby soon. We will give a shower for the new arrival at the beginning of our program. Bring an appropriate baby shower gift (maybe a gift card from Wal-Mart or your favorite location or special radio) and let's celebrate with them!

The main program will be interesting to all DARC members. The topic is "Fox Hunting & Direction Finding". Tim Lewis KD6FWD, President of the Ham Association of Mesquite (HAM) and members of HAM, will present a subject in which they have broad experience. HAM regularly hosts a fox hunt in Mesquite. These events are well-planned, well-attended and a lot of fun and learning.

Depending on the time and weather conditions, they may be able to present a live demo of their equipment (they have a wide variety of equipment) and techniques.

Since we have mentioned having our own DARC fox hunt at some point, the timing is great. This will let the experts show us what makes up a great fox hunt.

See you July 5 for an enjoyable and informative time.

W1PE

By Randy Patterson, KE5JIT



Bob Peters W1PE, a former member of the DARC, recently became ill and needs our support as fellow radio operators.

We first became aware of Bob's just before our June meeting and thought it would be good to get a card and have folks attending HamCom to sign the card. Above is a picture of what became a full tri-fold with best wishes and signatures.

I delivered the card to Bob on Tuesday after HamCom. One of his AM radio buddies was there when the card was presented. His doctor came in while we were there and showing the card to his doctor was the first thing he did. Bob was totally surprised, but was very appreciative. I believe it helped to remind him people cared and wishes him a speedy recovery.

Bob has had a rough month including a trip to the Medical Center in Plano. The latest information from a couple days ago is he is scheduled to be moved to a rehabilitation facility soon. I will try and get some updated information before our club meeting on Tuesday evening.

AM phone – Radiotelephone transmission using an amplitude modulated carrier and both sidebands. This is the kind of signal used on the AM broadcast band because it can be received with the least complex of receivers. It was the primary method of Amateur Radio voice transmission until single sideband became more popular starting in the 1950s and '60s. It is still (or perhaps again) popular in certain segments of some HF bands.

President's Corner

By Tom General, KESICX



Hello everyone, and welcome to July. The newsletter is out a little later so Randy could cover Field Day 2011 in the July addition of "In the DARC". Of course June was a busy month with both Field Day and HamCom in our schedule of events and activities. Out of those two events came some interesting new developments which I'll cover a bit later. So let's get started with some of the things you will find of interest from this past month.

HamCom

W1AW/5

The club signed up for several events in support of the National ARRL convention. For starters the club participated in the W1AW/5 special event station with REACT and Garland ARC on Friday and Saturday. The station was hosted out of the DARC and REACT trailers. We ran CW and had a number of people come by. Our trailer was positioned on the west side of the Plano Convention Center. We were also reported on in an ARC newsletter out of Huntsville, Alabama – www.harc.net.

We also passed out info about the club and ham radio.

Wouff-Hong

The DARC actively helped out with the legendary Wouff-Hong ceremony on Friday evening at 11PM. I want to thank everyone who participated; Ginger W5AAN, Don W9VE, Katherine KE5ZCM, Bill AD8BC,

Skip WD5AAZ, and Megan KF9AS, to name a few. I'm sure I'm missing a few folks who helped out, but thanks to all who helped out.

If you weren't there – you missed out – as I cannot tell you what happened at the ceremony as it is secret - I can divulge some particulars without the wrath of other members. The ceremony had 63 attendees who survived the ceremony.

Mini Antenna Build

We pressed Bill AE5BK back into the antenna building business for HamCom. This time he worked his magic on a small 440MHz mini-loop antenna. This little antenna can fit on top of your trusty handi-talkie and allow you to listen in on LEO satellites. Several hams came by to try their luck at building one and were rewarded with their own version to amaze others.

Field Day

The DARC participated in our annual Field Day at Flag Pole Hill. We had an excellent turn out this year. Setup and tear down was loaded with new people, potential hams, and dedicated club members and our stations were occupied throughout the event even into the late night hours. I think it goes to prove "if you build it, they will come". Field Day is the biggest "non-contest" contest for our hobby. Our job is to reach out to the community and show folks what we do.

From this event we garnered three new members (to be confirmed at the July meeting) and we had at least 3 non-hams curious about Field Day and DARC (we'll get them in, I'm positive of that).

We had a couple of hams who got a little punchy, staying up all night long and, while fighting sleep, created a rather eccentric QSO script for W5FC. You can see their creative entry for Field Day at YouTube (yes, the world can see it):

http://www.youtube.com/watch?v=7uGYRtRz4Fk&feature=player_embedded

Don't forget to check the pictures from this year's event, there's a lot to see!

<http://picasweb.google.com/ke5icx>

Wayne Schollian K5EL SK

I'm sorry to report that Wayne K5EL is a SK. Wayne was well liked in the DARC and was frequently on the local repeater before his failing health prevented him from getting on the air. Wayne also was a net control for the popular 2007 "Morse Code on the Air" class held on the 2 meter W5FC repeater. Wayne was also a Marine veteran.

Wayne, we will miss you. 73 K5EL

New Net

Our PSO and ECOM officer Andy KE5KOF has started a new net, once a month, on the 88 repeater. The EmCOMM net is "non-denominational" concerning emergency communications. This "entry level" net is designed to provide information on emergency communications to the new ham or the ham wanting to get involved with community service and emergency support. The net runs about 15 to 30 minutes and is always the first Saturday after our meeting. The next net will be Saturday July 9th immediately after the Tech Net – which will start around 8PM. The topic will be APRS and its use in emergency communications and public service events.

Andy will also be using some internet on-line tools so you can see some of the links and tools used by emergency responders, ham operators, and others who are involved in EmComm operations and activities. Please go to the DARC website w5fc.org for additional information.

Future DARC Activities

Our next meeting will be Tuesday, July 5th. Our guests will be a couple of members from the Mesquite ARC talking about "fox hunts"; how to put them on, "the rules", and the techniques used to successfully find "the fox". Our General Meeting is at 7PM and runs to around 9. The board meeting is the same night

from 6PM to 7PM. All are welcome to attend either or both meetings. The DARC monthly meeting is at Brookhaven Church, 13000 Marsh Lane. We meet in the chapel/youth group building.

BSA Speakers Circuit

I've negotiated a joint project between the Metrocrest Amateur Radio Society (MARS) and the club to work on a Boy Scouts radio project. This project is still in its infancy but one of the groups we committed to two years ago was the BSA. Our plans are to jointly involve both clubs in meeting with troops in the Dallas area and talk up amateur radio. I've already asked several people in our club to potentially talk at BSA troop meetings in a "speaker's circuit" introducing the kids to amateur radio. If we can organize an effective strategy, the plan is to offer a "mini Field Day" somewhere in the Dallas area for the kids to try out radios, see how antennas are used, and answer any questions they have on the field displays. Our plans are to implement this in the September timeframe. I am in communication with the president of MARS, David Gilpin W5GIL and we'll jointly report back on what our final plans are for this event.

Red Hot Chili Pepper Bike Rally, August 20th, 2011

We have a small "breather" before our next regularly scheduled public service event, however it's never "too early" to ask for help for the RHCP ride on August 20th. The DARC is a regular supporter of this event which benefits the Calumet Center in Dallas. The 65 mile ride traverses 3 counties and quite a challenge for the club, but it's a rewarding event and gains a lot of exposure for the club. Also, we get quite a few people from outside the club who help us out on this event.

Please put it on your calendar now, or contact our PSO, Andy KE5KOF andy@ap-testing.com, so he "put you on the roster". We'll need SAG's, shadows, and rest stop radio operators. Many of our newest members volunteer for this event and you can too. It's a great way "to get your feet wet" in community

service, get some use out of that HT/mobile unit – maybe even try out that new roll-up j-pole you made in the spring. Plus we have a fun time working together – even if we are separated over fairly large distances!

Next Antenna Project – 2 Meter Yagi

Antenna Project #3 is coming up soon. We have not tacked on a date yet, however we'll let you know when and where but a useful, easy to build, and cheap 2-meter yagi is in the works. This antenna will improve your HT's output directionally and is another one in the "Spare Parts" series of antennas. Built from brazing rod and PVC this antenna will "set you back" about \$6 and perform equally as well as one of those "commercially available units" at ten times the cost.

HT Boot Camp

Another activity will be the HT Boot Camp. This is an event where you bring your handi-talkie (doesn't matter which one) and learn ten things useful about your radio. Some of "those things" include setting simplex, reverse, duplex, and step frequencies, entering a PL tone, using DTMF, and programming radio frequencies into memory. The intent is to give operators a working knowledge of their radio both for events and emergencies.

Dallas Police Department

We've been asked by the DPD to consider some volunteer work with their police dispatch group. After a visit with one of the senior officers at Field Day several DARC members will be visiting their dispatch facility and sitting down and talking with their operations people to see how the DARC can help them out in radio related activities. We'll report more once a visitation date is formed up.

EmComm Group Formation

This past Saturday I had the opportunity to talk with several hams about the formation of a special EmComm group. I cannot say much about this, but it could involve a number of clubs and organizations in support of a served agency in the area. It would not replace any current EmComm organization or activity but

would, instead, assist in an area currently not actively supported by ham radio. This idea is in the early stages, but after some discussion, it sounds like a worthy opportunity for Dallas area hams. At the least, it involves some of the most active hams in the area and, just from that point, could really yield some fun opportunities outside of the traditional club/organization structure. When the idea was presented to me I found it quite intriguing and many ideas flowed freely from the ad hoc discussion. We'll see where this takes us in the coming months but I'm very excited about the possibilities.

A Final Word

As you can see, we are doing a lot of things, club wise. That's because we can! Membership is up and we have more people volunteering for our recurring and new events. This is part of my commitment in January to you, that we would do a lot of stuff, echoed in the theme "Stuff' My Club Does". To be successful you have to do things people are interested in and as we get more active membership we can continually expand into new areas. That's one of the magical things about clubs. You put into motion, plans with a group of people working in the same direction; you can do things no one person can accomplish. We'll continue in that direction and we'll be jamming the calendar with fun things to do and try. But I do need one thing from all of you; please consider volunteering for at least ONE event this year. We'll need your support! It doesn't have to be "in the field", it can be answering email, or updating the webpage, or making a few phone calls. Or, and here's a fun one, show us something you built, run, or created for your ham shack! That's volunteering!

Well, that's it for this month. See you next time! Have a great summer (and don't forget RHCP)!

73,

Tom

Did You Know?

We are accepting volunteers for our Red Hot Chili Pepper event which is Saturday, August 20, 2011. Let us know if you are able to help by sending a note to publicservice@w5fc.org

Turkey Trot is coming Thanksgiving Day and volunteers are needed for this event. Drop a note to publicservice@w5fc.org if you will be able to help.

Tom Thumb Good Neighbor Program Benefits the DARC



Get a Tom Thumb Reward card and designate 4056 as the code for the donation program you want Tom Thumb to donate to. The DARC will receive 1% of your purchase price as a donation from Safeway/Tom Thumb.

The club receives a check quarterly from Safeway for this. Please take the time to sign up for it.

Smith chart – Chart with a resistive and reactive axis. Any value of resistance and reactance in a series combination can be plotted on the chart, then with a ruler and compass the SWR and load impedance as a function of electrical length of a transmission line can be determined.

Minutes of the DARC Board

Meeting of 07 June 2011

Present

President	Tom - KE5ICX
Vice-President	Kevin - N5KRG
Secretary	Larry - KA5TXL
Treasurer	Tony - KE5TGM
Director (12/2013)	Roger - KE5YTA
Director (12/2013)	Bill - AD8BC
Director (12/2011)	James - N5BKL
Director (12/2012)	Scott - KE5DKV
Director (12/2012)	Randy - KE5JIT
Absent	
Director (12/2011)	Bob - KE5PHX

- 1) Tony KE5TGM gave the treasurer's report
- 2) Minutes of the last board meeting were approved
- 3) Randy KE5JIT stated that the city of Dallas is waiting for state approval to spend funds for the D*Star repeater system
- 4) Bernie K5BP gave an update on the voter system. Also it was noted that the CW id can only be set to between 5 and 20 WPM. Any setting outside of will cause the id'er not to function and return an error code.
- 5) Trailer Status is ready to go for HamCom, Randy KE5JIT is waiting on the new license sticker for the generator trailer to take it to the shop for cost estimate to re-skin.
- 6) Plans for Wouff Houng were discussed
- 7) Plans for the joint venture with Dallas React on the W1AW/5
- 8) Plans for field day were discussed, possibly having a on the air net for operator practice.
- 9) Letters of Invitation were sent out for Field Day.
- 10) There were no Committee Reports
- 11) The meeting adjourned at 6:52 pm

Channel – Pair of frequencies (input and output) used by a repeater.

July Area Events

We have scanned WebPages from our sister Ham Clubs to compile this list. Should you wish to add your club event to our newsletter, send an email to ke5jit@yahoo.com

- **07/05 – Tuesday** – DARC Monthly Club Meeting – Brookhaven Church – 13000 Marsh Lane – Dallas – Board Mtg. 1800 hours; General Mtg. 1900 hours
- **07/16 – Saturday** – MARS Play Day
- **07/23 – DCARA** – Tour de Cure Bike Ride
- **07/29-30 – Okla State Convention – Ham Holiday 2011** – 401 S. Meridian @ I-40. www.HamHoliday.org Fri. 4-8pm. Sat 8a-3p.
- **07/31 – Sunday** – IARC Monthly Club Fox Hunt – 1:30 p.m.
- **Weekly – Saturday** – TECH NET – DARC – 146.880, PL 110.9 – 1900 – 2000 hours. Back-up repeater 442.425, PL 110.9
- **Weekly – Monday – 2000** – DCARA – Except 4th Monday. Information/Training Net – Freq. 146.920 PL 110.9
- **Weekly – Tuesday – except 3rd Tuesday** – 7-8p KK5PP repeater: 441.525 pl 141.3
- **Weekly – Wednesday** – 0830 – IARC – The Breakfast Club – McDonald's, 2410 N Story Rd, Irving (Between 183 & Rochelle)
- **Weekly – Thursday** – 11:00 a.m. - Crony Lunch – Garland ARC –Furr's Cafeteria – 350 S Plano Rd. – Richardson
- **Weekly – Thursday** – 8:45 – 9:30pm – Good News Net – Plano Amateur Radio Klub. WD5ERD repeater 147.18, +PL 107.2
- **Weekly – Saturday** – 0700 – 1000 hours – MARS – Hams & Eggs – What-A Burger – NE Corner of Old Denton & The Bush
- **Weekly – Last Saturday** – McKinney Amateur Radio Club – MARC Sidewalk Sale – Hwy 75 & Hwy 380 (West ½ mile) @ CCCC, McKinney 9a-noon
- **Weekly – Saturday** – McKinney Amateur Radio Club – MARC CW net on 7.1222 MHz @ 8:30a
- **Weekly – Sunday** – McKinney Amateur Radio Club – MARC Info Net 146.740 MHz @ 8p.

Minutes of the DARC Regular Club Meeting of 07 June 2011

The Club met on Tuesday June 7th at 7:09pm, the following officers and or directors were present.

President Tom General, KC5ICX
Vice – President Kevin Grantham, N5KRG
Secretary Larry Melby, KA5TXL
Treasurer Tony Medina, KE5TGM
Director (12/2011) James Shugart, N5BKL
Director (12/2012) Scott Drummond, KE5DKV
Director (12/2012) Randy Patterson, KE5JIT
Director (12/2013) Bill Cahill, AD8BC
Director (12/2013) Roger Elkington KE5YTA

Director (12/2011) Bob Kelly KE5PHX was on vacation.

- 1) Roger gave an overview of plans for field day.
- 2) The following visitors were recognized Brian Cooney of Lewisville (no license yet), Gregg (no license yet), Mike Tims of Lancaster N5MWT, Don & Patsy Tippen WA5FQF & KA5GPM, Dave Darsey (no call yet), and Russ N5KSV
- 3) Bernie K5BP gave a power point presentation on the voter system
- 4) Andy KE5EOF discussed club ECOMM training nets will take place on the Saturday following the general club meeting. This net will meet after the Club's weekly Tech Net.
- 5) The minutes of the May meeting were approved
- 6) Tony KE5TGM gave the treasurers report
- 7) Public Service/ HamCom the trailer will be in position this Thursday evening for the W1AW/5 Special Event Station
- 8) Plans for the most secret of conclaves were discussed
- 9) Bernie K5BP discussed plans for W1AW/5
- 10) Plans were made to build 440 MHz loop antennas Saturday afternoon at HamCom

- 11) Volunteers were solicited for overnight staffing at Field Day
- 12) The status of D*Star is that the city has applied to the state for the funding to purchase the equipment
- 13) Volunteers were solicited for the Red Hot Chili Pepper Ride in August
- 14) Upcoming opportunities were discussed for working with the Boy Scouts
- 15) The following were voted in as members of the DARC, Bob Wilkie KF5HGN and Mike Tims W5MW
- 16) The July meeting will be a presentation on Fox Hunting by Tim Lewis from the Mesquite HAM Club, also a baby shower for Bill AD8BC
- 17) It was announced a former club member Bob Peters W1PE had become ill and was in rehab.
- 18) The meeting adjourned at 9:07 pm

Characteristic curve – Plot of the relative responses of two or three analog device parameters, usually output with respect to input.

QRT

What is the purpose of a “step-start” circuit in a high-voltage power supply?

- A. To provide a dual-voltage output for reduced power applications
- B. To compensate for variations of the incoming line voltage
- C. To allow for remote control of the power supply
- D. To allow the filter capacitors to charge gradually

Answer: D

The modern, high-voltage power supply likely contains a series resistor and capacitor in parallel in the high-voltage plate circuit of the tube in order to buffer the initial in-rush of startup current. This **allows the filter capacitors to slowly build their charges**, minimizing that dreaded arc sound when you turn on a high-voltage supply that has been turned off for several years! Some ham operators bring up high voltage on older equipment with a variable AC transformer.

DARC Events

- **07/03 – Sunday – MOTA – 7:00 p.m.** – Meeting on the Air
- **07/05 – 1st Tuesday – DARC** Monthly Club Meeting – Brookhaven Church – 13000 Marsh Lane – Dallas – Board Mtg. 1800 hours; General Mtg. 1900 hours
- 07/09 – Saturday – 08:00 p.m.** – ECOMM Training – 146.880 repeater
- **07/17 – Sunday – MOTA – 7:00 p.m.** – Meeting on the Air
- **Weekly – Saturday – TECH NET** on the Air – 146.880, PL 110.9 – 1900 – 2000 hours Back-up frequency 442.425 PL 110.9

HF Trial by Fire

By KF5HXQ David Richardson

A Novice Dives into W1AW

It's not every amateur that gets to do his first HF work ever on a high-profile station like W1AW, but David Richardson, KF5HXQ did. Thanks to Bernie Parker, K5BP, and the equipment in Dallas REACT trailer, he worked 20M for about 45 minutes around lunchtime. He logged 28 contacts and working through several pileups. With "only" 28 contacts it was considered a "slow day" but David reports that it was about as many as he could handle on his first time out. Most contacts from the Western US but he also had contacts from Florida, Pennsylvania, and Alberta, Canada, as well as a couple of nearby contacts in Oklahoma and Arkansas. Scott Mercer, W7STM, of Carson City, NV, has the distinction of being David's first HF contact ever. David is looking forward to doing some nighttime HF work on Field Day.

ISB – System in which the channel bandwidth allocated to a double sideband AM signal is used to carry two independent signals, one on each sideband.

Treasurer's Report for 05/2011

Dallas Amateur Radio Club, Inc.,

Treasurer's Report - May 2011

(5/1/2011 through 5/31/2011)

Date Presented: 6/7/2011

Checking:	\$ 9,693.84
Vanguard (Ann and Whit Griffith Fund):	\$8,535.14
PayPal:	\$ 0.00
Expenses for May 2011:	
Voter system	\$ 115.89
Trailer work	\$ 140.01
Tech net food, generator fuel	\$ 221.16
Repeater site	\$ 50.00
AT&T	\$ 30.00
Total:	\$ 557.06

Tony Mendina, Treasurer, DARC

Tech Net Tidbits

By K5CRX Bob DeVance

Some Automatic Gadgets in Ham Radio

AVC - Automatic Volume Control - may actually be AGC; if actually included, this circuit works in the audio stages of a receiver or other amplifier to maintain a constant volume level

AGC - Automatic Gain Control - a receiver circuit that helps maintain a constant signal level to the audio detectors so that listening volume and quality are reasonably consistent. It boosts the circuit gain during weak signal reception and decreases circuit gain during strong signal reception, helping to keep the audio at a comfortable listening level. This feature is particularly important for AM reception where the amplitude of the signal represents the audio being carried. Signal levels can vary for numerous reasons including atmospheric conditions, moving vehicles, and interference.

ALC - Automatic Level Control - or Audio compressor - a circuit that tries to maintain maximum and constant modulation during

transmit - especially for FM. This value is often mentioned in adjusting transmitters for digital operations in relation to preventing over-modulation.

Oscillator - a circuit that generates a particular frequency. There are various circuit types named after their inventors. The crystal oscillator has been a long-standing staple of amateur radio as it produces a precise, accurate, and repeatable frequency.

VFO - Variable Frequency Oscillator - DDS - Direct Digital Synthesis -An oscillator whose output frequency can be changed by adjusting a variable inductor or variable capacitor.

AFC - Automatic Frequency Control (PLL) (**AFT** - automatic fine tuning) - Used in FM receivers to prevent drifting off the received station's frequency. Adds stability to intermediate frequency circuits

VOX - Voice Operated Transmit

Notes:

Automatic Gain Control is a most needed part of superhet circuitry.

A disadvantage of manual gain control (volume control) with a receiver is that it can't provide constant output under all conditions. If a receiver is tuned from a weak signal to strong signal, its output must increase intolerably. This would then require readjustment of the volume control. Similarly, when a receiver is tuned to particular signal the output level can vary widely if the input signal strength fluctuates as a result of fading and adjustments of the volume control has to be done. Since such signal fluctuations are rapid, constant readjustment of volume control would be necessary which is impractical. This is where AGC or AVC comes into picture and is used in addition to the manual control.

All AGC or AVC (Automatic Volume Control) circuits perform two basic functions; the first of these is to develop a DC (Direct Current) which is proportional to the receiver input signal all the time.

The AGC voltage is applied to the RF and IF stage of the receiver where it serves as a Bias voltage. In this way the AGC voltage controls the gain of RF and IF stages, and therefore the overall gain of the receiver. When the signal level at the receiver input increases, the AGC voltage increases proportionately. Consequently, a larger bias is applied to the IF and RF stages and their gain is applied to the IF and RF stages and their gain is reduced. The receiver output thus remains relatively constant instead of increasing in accordance with the input signal strength and vice-versa. In valve type RX (receiver), the grids of RF and IF portions valves are biased by negative voltage. While in a transistor it depends on transistor type.

Compressor or Automatic Level Control. This circuit is usually built using operational amplifiers in conjunction with other controlling IC's. And these are the following task of this device:

1. Provides 100% of allowable modulation. In other words the level of incoming sound is a maximum that modulator can handle (perfectly matched with the sensitivity of the modulator). That's why the sound on the receiver is very high but at the same time very clear.
2. Prevents over modulation. The best thing is to keep modulation to the maximum (100%) but if that allowable line is crossed then there would be over modulation of audio cycle when the RF carrier is removed completely from the air thus producing distortion in the transmission. How does that happen? In most of the transmitters the same block or even a transistor is responsible for both modulation and generation of the carrier frequency (88-108MHz). If over modulation takes place transistor (Q1) becomes so unstable that it cannot generate a clear carrier frequency and in result we hear the distortion.
3. Keeps an audio on the same level. This is especially crucial when using microphone as a source because its dynamics (audio levels) are never steady. When playing music, some of the tracks might be recorded at different audio

levels and when a user receives a given radio station he or she doesn't want to set an audio level every few minutes or so, you want the sound loudness to always be the same.

If you just want to build a simple transmitter so you can transmit your music around the house you can live without automatic level control but then you'll need to make sure that audio signal of your source is set to minimum level and that it is matched with your transmitter.

Oscillator

Just as the name implies an oscillator oscillates or generates a frequency. It can be found in most of the electronic devices and in our case it is found in all FM transmitters and receivers as well. A simple one transistor FM transmitter is in fact nothing else but an oscillator and a modulator. An output power of one transistor oscillators found in these transmitters is often very small, 50mW or below. If such transmitter does not have at least a separator or an amplifier then in that case this oscillator is very prone to frequency drifts. A single touch to its antenna may cause a slight frequency change.

Oscillator Types:

1. VFO (Variable Frequency Oscillator) - An oscillator whose output frequency can be changed by adjusting a variable inductor or variable capacitor.

2. VCO (Voltage Controlled Oscillator) - An oscillator whose output frequency is controlled or changed by an application of external voltage. VCO uses varicap diode that changes the capacitance as different levels of voltage are applied.

3. PLL (Phase Locked Loop) - A circuit that synchronizes a frequency of VCO with a frequency of a reference oscillator by using a comparison of phase between the two signals. PLL takes a frequency of VCO, divides it into a lower frequency which can be compared with a stable reference oscillator. Then amplifiers are used to send an appropriate voltage back to the VCO to keep the desired frequency stable.

4. Crystal Oscillator - Oscillator that uses a crystal to generate a frequency.

HamCom 2011 Pictures





Field Day 2011 Pictures





